

RD27416-2  
(GP2-0286)

## REMARKS

### Pending Claims

The 6/30/04 Office Action repeatedly refers to pending claims 1-19. Applicants respectfully note that claims 1-22 were filed. Applicants appreciate the Examiner's clarification, in 7/22/04 and 7/27/04 telephone conferences, that claims 20-22 were inadvertently omitted from examination and that Applicants should treat claims 20-22 as subject to the same anticipation rejection as claims 1-19.

### References Not Considered

Applicants note that the Examiner lined out as not considered U.S. Application Serial Nos. 10/638,100, 10/638,094, and 10/638,145, which were listed on the Form PTO-1449 filed with the Information Disclosure Statement mailed 11/7/03 and stamped received on 11/10/03. Applicants are submitting herewith an Information Disclosure Statement with Form PTO-1449 listing the corresponding patent application publications. Pursuant to the 7/11/03 Waiver, Applicants need not submit copies of the patent application publications because the applications were filed after June 30, 2003.

### Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claim 5 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner stated that "Claim 5 is indefinite due to the use of "a dimension perpendicular to the haze-prevention layer and the reflective metal layer". Applicants have amended claim 5 to delete the allegedly indefinite phrase. Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claim 5 under 35 U.S.C. § 112, second paragraph.

### Claim Rejections Under 35 U.S.C. § 102(e)

RD27416-2  
(GP2-0286)

Claims 1-19 stand rejected under 35 U.S.C. § 102(e), as allegedly anticipated by U.S. Patent No. 6,355,723 to van Baal et al. (hereinafter "van Baal"). Applicants respectfully traverse this rejection.

Van Baal generally describes a molded article suitable for direct application of a reflective metal coating. Van Baal abstract. The molded article includes an amorphous thermoplastic or thermoplastic blend having a glass transition temperature greater than about 170° C. and at least one thermally stable colorant that contributes to the article's dark appearance. Id. A key advantage of the molded article is that it has a sufficiently smooth surface that it can be directly coated with a reflective metal. Id. at col. 3, l. 61 to col. 4, l. 5 and col. 4, ll. 49-50. In practice, this has been a key commercial advantage, because it allows manufacturers to omit the time and expense associated with a separate step of pre-coating the molded plastic part before applying a reflective metal coating. Although such a pre-coating step is not required, van Baal teaches that it may optionally be employed. Specifically, the molded plastic substrate may be pre-coated with a primer before coating the metal. Id. at col. 4, ll. 50-52. The molded article may also, optionally, comprise a clear protective layer on top of the metal layer. Id. at col. 4, ll. 52-54. The clear protective layer may be a silicone-derived clear coat deposited by plasma-based silicone polymerization. Id. at col. 4, ll. 54-56. Note, in particular, that van Baal's reference to the silicone-derived clear coats is in the context of the optional clear protective layer applied over the metal layer, not the optional primer layer between the molded substrate and the metal layer. In sum, the van Baal invention is directed to a reflective article that exhibits high reflectivity and low haze as-manufactured without the need for a primer layer between the molded thermoplastic substrate and the reflective metal layer. The composition of the thermoplastic substrate enabled this advantage.

While working in the same product arena, the present inventors have tackled a different problem with a different solution. They observed that although reflective articles, in particular automotive headlights, exhibited high reflectivity and low haze when they were manufactured, these properties tended to degrade over time. After extensive research to determine the nature of the problem and to explore possible solutions, it was discovered that degradation of reflectivity and haze could be

RD27416-2  
(GP2-0286)

substantially reduced if the reflective articles included, between the thermoplastic substrate and the reflective metal layer, a haze prevention layer comprising certain materials. Although the suitable materials have chemically diverse compositions, they are united by the common properties of a volume resistivity of at least  $1 \times 10^{-4}$  ohm-centimeters measured according to ASTM D257 at 25°C and a tensile modulus of at least about  $3 \times 10^5$  pounds per square inch measured according to ASTM D638 at 25°C. Thus, the present inventors have been able to significantly improve the performance of reflective articles by discovering that decreases in reflectivity and increases in haze over time can be substantially reduced by incorporating a haze prevention layer having particular properties between the thermoplastic substrate and the reflective metal layer.

Applicants respectfully submit that their independent claim 1 is not anticipated by van Baal because van Baal does not teach all elements of that claim. To anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Varient Inc.*, 3 U.S.P.Q.2d 1766, 1767 (Fed. Cir. 1987). Applicants' claim 1 recites, inter alia, the presence of "a haze-prevention layer interposed between the substrate and the reflective metal layer, wherein the haze-prevention layer comprises a material having a volume resistivity of at least  $1 \times 10^{-4}$  ohm-centimeters measured according to ASTM D257 at 25°C and a tensile modulus of at least about  $3 \times 10^5$  pounds per square inch measured according to ASTM D638 at 25°C". Van Baal does not teach these limitations. It is true that van Baal teaches that "it is . . . possible to pre-coat the molded article with a primer before applying the metal coating." Van Baal, col. 4, ll. 50-51. However, Applicants respectfully assert that the Examiner has incorrectly characterized the reference by stating that "Baal teaches . . . the primer coat to be plasma-polymerized silicone." 6/30/04 Office Action, page 3, first full paragraph. To the contrary, it is clear from context that the teaching of "[s]ilicone derived clear coats, often deposited by plasma based silicone polymerization" (col. 4, ll. 54-56; emphasis added) refers to the previous sentence's reference to "further coat[ing] the metallized article with a clear layer to protect the metal surface from scratching oxidation, or related problems" (col. 4, ll. 52-54; emphasis added). In other words, the silicone-derived clear coats are taught for use on top of the metal layer, not as a pre-coat applied between the substrate and the metal layer. This

RD27416-2  
(GI2-0286)

interpretation is further reinforced by the passage at col. 7, ll. 3-7 cited by the Examiner, where a 50-100 Angstrom coating of plasma polymerized hexamethyl disilazane is coated on top of the metal layer, not between the substrate and the metal layer. Thus, van Baal does not teach Applicants' claim 1 limitations of "a haze-prevention layer interposed between the substrate and the reflective metal layer, wherein the haze-prevention layer comprises a material having a volume resistivity of at least  $1 \times 10^{-4}$  ohm-centimeters measured according to ASTM D257 at 25°C and a tensile modulus of at least about  $3 \times 10^5$  pounds per square inch measured according to ASTM D638 at 25°C". Therefore, claim 1 is not anticipated by van Baal. Given that claims 2-22 each include or further limit all the limitations of claim 1, they, too, are not anticipated by van Baal.

Applicants further note that several of the dependent claims are further patentable because van Baal fails to teach their respective limitations. For example, as discussed above, van Baal fails to teach the claim 9 limitation that "the haze-prevention layer comprises a plasma-polymerized organosilicone". Claims 10 and 11, which further limit claim 9, are therefore also patentable over van Baal. Van Baal fails to teach the claim 12 limitation that "the haze-prevention layer comprises diamond-like carbon". Van Baal fails to teach the claim 13 limitation that "the haze-prevention layer comprises a colloidal silica composition comprising colloidal silica dispersed in a silanol-, acrylic-, or methacrylic-derived polymer system". Van Baal also fails to teach the claim 15 limitation that "the haze-prevention layer has a thickness of about 100 nanometers to about 100 micrometers".

For all of the above reasons, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 1-22 over van Baal.

#### New Claim

Claim 23 been added to further claim the invention. Support for the recited amorphous thermoplastic resins may be found in claims 2 and 3 as filed.


RD27416-2  
(GP2-0286)

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 07-0862 maintained by Assignee.

Respectfully submitted,

CANTOR COLBURN LLP  
Applicants' Attorneys

By:   
J. Michael Buchanan  
Registration No. 44,571

Date: July 27, 2004  
Customer No.: 23413  
Telephone: (860) 286-2929